

## ABSTRACT

The present invention provides polynucleotides that encode a protein, designated herein as K<sup>+</sup> Channel Associated Protein or "KChAP". It has been determined that expressing polynucleotides that encode KChAP in host cells, along with polynucleotides that encode the K $\alpha$  channel subunit Kv 2.1, the K $\alpha$  channel subunit Kv 2.2, the K $\alpha$  channel subunit Kv 1.3, or the K $\alpha$  channel subunit Kv 4.3, increases the number of Kv2.1, Kv 2.2, Kv1.3 or Kv4.3 channels, respectively, in the plasma membrane of such cells. The present invention also relates to a method of making cells that have increased numbers of Kv channels on the plasma membranes thereof and to a method of using such cells as model systems for studying the effect of pharmacological agents on Kv channels, particularly on Kv2.1, Kv 2.2, Kv 1.3, and Kv 4.3 channels. The present invention also relates to the protein KChAP.